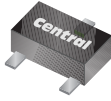


CMUT5087E PNP  
CMUT5088E NPN

**ENHANCED SPECIFICATION  
SURFACE MOUNT  
COMPLEMENTARY  
SILICON TRANSISTORS**

ULTRAm<sup>TM</sup>ini



SOT-523 CASE



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMUT5087E and CMUT5088E are Silicon transistors in an ULTRAm<sup>TM</sup>ini surface mount package with enhanced specifications designed for applications requiring high gain and low noise.

**MARKING CODES: CMUT5087E: U87  
CMUT5088E: U88**

**MAXIMUM RATINGS:** (T<sub>A</sub>=25°C)

- ◆ Collector-Base Voltage
- ◆ Collector-Emitter Voltage
- ◆ Emitter-Base Voltage
- Continuous Collector Current
- Power Dissipation
- Operating and Storage Junction Temperature
- Thermal Resistance

**SYMBOL**

V <sub>CB0</sub>	50
V <sub>CEO</sub>	50
V <sub>EBO</sub>	5.0
I <sub>C</sub>	100
P <sub>D</sub>	350
T <sub>J</sub> , T <sub>stg</sub>	-65 to +150
θ <sub>JA</sub>	357

**UNITS**

V
V
V
mA
mW
°C
°C/W

**ELECTRICAL CHARACTERISTICS:** (T<sub>A</sub>=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP			UNITS
		MIN	NPN	PNP	
I <sub>CB0</sub>	V <sub>CB</sub> =20V				50 nA
I <sub>EBO</sub>	V <sub>EB</sub> =3.0V				50 nA
◆ BV <sub>CB0</sub>	I <sub>C</sub> =100μA	50	135	150	V
◆ BV <sub>CEO</sub>	I <sub>C</sub> =1.0mA	50	65	105	V
◆ BV <sub>EBO</sub>	I <sub>E</sub> =100μA	5.0	8.7	7.5	V
◆ V <sub>CE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA		45	50	100 mV
◆◆ V <sub>CE(SAT)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA		110	225	400 mV
V <sub>BE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA		700	700	800 mV
◆ h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =0.1mA	300	430	390	900
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =1.0mA	300	435	380	
◆ h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =10mA	300	430	350	
◆◆ h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =100mA	50	125	75	
◆ f <sub>T</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =500μA, f=20MHz	100			MHz
C <sub>ob</sub>	V <sub>CB</sub> =5.0V, I <sub>E</sub> =0, f=1.0MHz				4.0 pF
C <sub>ib</sub>	V <sub>BE</sub> =0.5V, I <sub>C</sub> =0, f=1.0MHz				15 pF
h <sub>fe</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =1.0mA, f=1.0kHz	350			1400
NF	V <sub>CE</sub> =5.0V, I <sub>C</sub> =100μA, R <sub>S</sub> =10kΩ f=10Hz to 15.7kHz			3.0	dB

- ◆ Enhanced specification
- ◆◆ Additional Enhanced specification

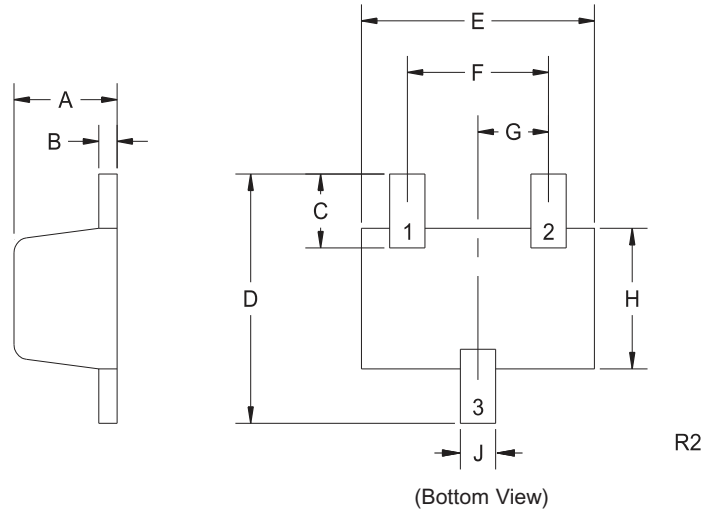
R2 (9-February 2010)

CMUT5087E PNP  
 CMUT5088E NPN

**ENHANCED SPECIFICATION  
 SURFACE MOUNT  
 COMPLEMENTARY  
 SILICON TRANSISTORS**



**SOT-523 CASE - MECHANICAL OUTLINE**



**LEAD CODE:**

- 1) Base
- 2) Emitter
- 3) Collector

**MARKING CODES:**

CMUT5087E: U87  
 CMUT5088E: U88

SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.023	0.031	0.58	0.78
B	0.002	0.008	0.04	0.20
C	0.013	0.021	0.34	0.54
D	0.059	0.067	1.50	1.70
E	0.059	0.067	1.50	1.70
F	0.035	0.043	0.90	1.10
G	0.020		0.50	
H	0.031	0.039	0.78	0.98
J	0.010	0.014	0.25	0.35

SOT-523 (REV: R2)

R2 (9-February 2010)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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